

CLAIMS

What is claimed is:

5        1. A method for determining the location of the interface between fat and lean tissue in a cut of meat, comprising the steps of:

inserting a probe tip progressively into the cut;  
emitting light from the probe tip and into the cut; and  
monitoring the light returning to the tip from the cut.

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2. A method according to claim 1 wherein monitoring the returning light comprises monitoring for a decrease in returning light.

15        3. A method according to claim 2 comprising the additional step of correlating the amount of returned light with the physical location of the probe tip.

4. A method according to claim 1 wherein the step of inserting a probe tip comprises providing a generally frusto-conical probe tip having a point.

5. A method according to claim 1 wherein the step of inserting a probe tip comprises the steps of:

defining in the probe tip a reception aperture and at least one emission aperture;

5 generating light at a light source;

providing a light detector;

transmitting incident light from the light source to the at least one emission aperture; and

transmitting reflected light from the reception aperture to the light detector.

10 6. A method according to claim 5 wherein defining a reception aperture comprises locating the reception aperture at the central axis of the probe tip.

15 7. A method according to claim 6 wherein defining at least one emission aperture comprises locating a plurality of emission apertures in an array around the reception aperture.

8. A method according to claim 5 wherein the step of generating light comprises selecting a light source from among the group consisting of light-emitting diodes and lasers.

20 9. A method according to claim 8 wherein selecting a light source comprises selecting a source of green light.

10. A method according to claim 5 wherein transmitting incident light comprises disposing optical fiber between the light source and the at least one emission aperture.

11. A method according to claim 5 wherein transmitting reflected light comprises  
disposing optical fiber between the reception aperture and the light detector.

12. A method according to claim 1 wherein the step of inserting a probe tip  
5 comprises the steps of:

defining in the probe tip an aperture;  
generating light at a light source;  
providing a light detector;  
disposing a beam-splitter;  
10 transmitting incident light from the light source to the aperture via the beam  
splitter; and  
transmitting returning light from the aperture to the light detector via the beam  
splitter.

15 13. A method according to claim 1 wherein the step of inserting a probe tip  
comprises inserting a plurality of probes.

14. A method for determining the location of the interface between fat and lean tissue in a cut of meat, comprising the steps of:

- inserting a probe tip progressively into the cut;
- determining the physical location of the probe tip;
- emitting light from the probe tip and into the cut;
- monitoring the light returning to the tip from the cut; and
- correlating the amount of returning light with the physical location of the probe tip

15. A method according to claim 14 wherein monitoring the returning light comprises monitoring for a decrease in returning light.

16. A method according to claim 15 wherein the step of inserting a probe tip comprises providing a sharp probe tip having a conical portion tapering toward a point.

17. A method according to claim 16 wherein the step of inserting a probe tip comprises the steps of:

defining in the probe tip a reception aperture and at least one emission aperture; generating light at a light source remotely from the tip; providing a light detector remotely from the tip; transmitting incident light from the light source to the at least one emission aperture; and transmitting returning light from the reception aperture to the light detector.

18. A method according to claim 17 wherein defining a reception aperture comprises locating the reception aperture at the central axis of and on the point of the probe tip.

5 19. A method according to claim 18 wherein defining at least one emission aperture comprises locating a plurality of emission apertures in the conical portion of the tip in an array around the reception aperture.

10 20. A method according to claim 19 wherein the step of generating light comprises selecting a light source from among the group consisting of light-emitting diodes and lasers.

21. A method according to claim 20 wherein selecting a light source comprises selecting a source of green light.

15 22. A method according to claim 21 wherein transmitting incident light comprises disposing optical fiber between the light source and the at least one emission aperture, and wherein transmitting reflected light comprises disposing optical fiber between the reception aperture and the light detector.

20 23. A method according to claim 1 wherein the step of inserting a probe tip comprises inserting a plurality of probes.